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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/830,896	05/02/2001	Dieter Meissner	KONIG-003	5345

1815 7590 07/30/2003

SELITTO, BEHR & KIM  
203 MAIN STREET  
METUCHEN, NJ 08840-2727

EXAMINER
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YUAN, DAH WEI D

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 07/30/2003

60

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application N .

09/830,896

Examiner

Dah-Wei D. Yuan

Applicant(s)

MEISSNER ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-6,9,10 and 13-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-5,9,10 and 13-18 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6. 6) ☐ Other: .

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**METHOD FOR REGULATING THE FUEL CONCENTRATION IN A FUEL MIXTURE  
OF A FUEL CELL WHICH CONTAINS ALCOHOL OR ETHER AS FUEL AND  
WATER, AND FUEL CELL SYSTEM**

Examiner: Yuan

S.N. 09/830,896

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July 21, 2003

**Detailed Action**

1. The Applicant's amendment filed on May 27, 2003 was received. Claims 1,7,8,11,12 were cancelled. Claims 2-6,9,10,13 were amended. Claims 14-18 were added.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action (Paper No. 5).

***Claim Objections***

3. The claim objections on claims 5-11 are withdrawn because the claims are either canceled or amended.

***Claim Rejections - 35 USC § 102***

4. The claim rejections under 35 U.S.C. 102(b) as anticipated by Kumagai et al. (US 4,810,597) on claims 1,3,4,12,13 are withdrawn, because the independent claims 1 and 12 have been cancelled.
5. Claims 2-5,9,10,13-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Kumagai et al. (US 4,810,597).

With respect to claims 14,18, Kumagai et al. teach a fuel cell a fuel cell having a fuel electrode, an oxidant electrode, an electrolyte and a methanol concentrating control device. The method for controlling the methanol concentration in the fuel stream of the fuel cell system is also taught. A pipe (9) for feeding fuel to the cell stack (8) is furnished with a methanol concentration control device (10) (measurement chamber). A methanol-water mixture is stored in a fuel tank (13) (mixing space) and new methanol is supplied manually through a supply hole (14). A fuel cell (15), comprising a fuel electrode (1), an oxidant electrode (2) and an ion-exchange membrane (3), provides a fuel concentration detection portion (22) of the methanol concentration control device (10). It is known in the art that the ion-exchange membrane in the fuel cell is porous and permeable to a portion of the fuel mixture. The open-circuit voltage of the fuel cell is sensed by a voltmeter (17) via a lead (20). The sensed signal is feedback-controlled by a compensation device (18) on the basis of the relationship between the open-circuit voltage and the methanol concentration. Thus, a methanol-water feed valve is open or close to provide a control of the concentration of the methanol in the pipe (9) by addition of the methanol-water mixture. See Abstract, Column 3, Lines 38-56; Column 4, Lines 1-7; Column5, Line 56 to Column 6, Line 18; 51-56.

With respect to claims 4,17, in another embodiment, the methanol concentration detection means comprises a diaphragm (3), an air electrode (2) and a counter electrode (24) (a liquid sensor) as shown in Figure 11. The interspace between the diaphragm and the counter electrode is filled up with a standard anolyte liquid (carrier fluid) to be adjusted.

With respect to claims 2,3,5, Figure 10 shows a characteristic relationship between the methanol concentration and detected voltage as determined by using a methanol concentration control device. The device can measure methanol concentration ranging from 0 to 5 mol/l (which is equivalent to 0 to 20.2% by volume).

With respect to claim 9,10,13, Kumagai et al. teach the methanol detection means in Figure 2 is a gas sensor, which is used to measure the conductivity of the fuel mixture.

With respect to claims 15,16, the standard methanol concentration in the fuel is about 4 wt.% (1 mol/l). The detectable methanol concentration in the Kumagai et al. reference is ranging from 0.2 to 5 mol/l. As a result, the concentration of the fuel in the portion of the fuel mixture permeating the membrane can be higher or lower than the concentration of the methanol in the fuel mixture.

#### ***Allowable Subject Matter***

6. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 6 would be allowable because the prior of record does not teach or suggest the measurement of a physical property selected from the group consisting of density, viscosity, optical characteristic, infrared adsorption, or a combination thereof.

***Response to Arguments***

7. Applicant's arguments filed on May 27, 2003 have been fully considered but they are not persuasive.

*Applicant's principle arguments are*

*There is no indication in the Kumagai reference that the methanol fuel permeates from the fuel stream to the air stream through the membrane.*

In response to Applicant's arguments, please consider the following comments.

It is well known in the fuel cell art that membrane is ionically conductive and permeable to the reactant. This phenomenon is typically observed in a direct methanol fuel cell, in which the liquid fuel (methanol and water) permeates through the membrane and combines with the oxygen at the cathode. See Surampudi et al. (US 6,589,684 B1), Column 5, Lines 43-48.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (703) 308-0766. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Dah-Wei D. Yuan  
July 28, 2003

  
CAROL CHANEY  
PRIMARY EXAMINER  
7-28-03